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Prevention Messages to Reduce the Risk of Shigellosis among
Men who have Sex with Men

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B.A., GEORGIA STATE UNIVERSITY

A.S., GEORGIA PERIMETER COLLEGE

A Capstone Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
30303

ABSTRACT

Prevention Messages to Reduce the Risk of Shigellosis among
Men who have Sex with Men

By

Steve Linh Evener

April 19, 2018

INTRODUCTION: *Shigella* bacteria causes a diarrheal disease known as shigellosis through the ingestion of feces. Recent culture-confirmed diagnoses have been identified as antibiotic-resistant and can be life-threatening for some people. Men who have sex with men (MSM) are more often diagnosed due to risky sexual behaviors. In addition, the use of pre-exposure prophylaxis (PrEP) may contribute to risky sexual behavior among MSM.

AIM: The aim of this capstone is to use secondary data collected from focus groups to guide the creation of prevention messages based on health promotion theories.

METHODS: Participants were recruited in Atlanta, GA to attend focus groups that assessed their perceived threat, perceived susceptibility, and ideas of effective prevention messages. Six focus groups were conducted with a total of $n = 24$ participants that lasted approximately one hour.

RESULTS: Only four participants had heard of *Shigella* prior to this study. Main themes addressed by participants included stigma/inclusion; using humor, curse words, and images; and connecting prevention messages with HIV/AIDS and other STIs. Some participants reported use of PrEP. Participants more often suggested using mobile apps and placing ads on the walls of men's restrooms in gay bars. In addition, each group mentioned specific sexual behaviors, including fisting, rimming, scat, and oral/anal sex, to include in messages.

DISCUSSION: Messages for tobacco control made use of scare tactics, but those may not be suitable regarding shigellosis. The Elaboration Likelihood Model of Persuasion and Diffusion of Innovation may be more effective.

APPROVAL PAGE

Prevention Messages to Reduce the Risk of Shigellosis among
Men who have Sex with Men

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Acknowledgments

Special acknowledgments and thank yous to Dr. Eric Wright and Dr. Hannah Jackson for working with me on this capstone. Their guidance throughout this process has been extremely helpful and has made me a better researcher. I am very thankful for the opportunity to work with and learn from both of them outside of the classroom. I really enjoyed working with Ebony Townsend Respress and Kathleen Jacobson on this project. They have become wonderful friends and I can't wait to see what we work on next as a team. Thank you to Keith Hood, Terry Hackworth, and Neon Douglas for helping with the recruitment process. This project would not have had the participants it had without my friends who participated and helped spread the word about the study. It has been an honor meeting and working with the team at the CDC. Learning how to use MaxQDA to analyze focus group transcripts has been a struggle. All the technology glitches and the numerous meetings to decide what should be coded and why taught me how research in the real world happens. Thank you to all my professors at Georgia State University in the School of Public Health for doing what they do and teaching me about public health.

Author's Statement Page

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Prevention Messages to Reduce the Risk of Shigellosis among Men who have Sex with Men

Background

Bacteria from the genus *Shigella* are gram-negative bacteria shaped like rods that do not produce gas from carbohydrates (Percival & Williams, 2014). The discovery of *Shigella* bacteria is credited to a Japanese physician named Kiyoshi Shiga in 1898 (Lampel, Formal, & Maurelli, 2018; Percival & Williams, 2014). Infection of the *Shigella* bacteria causes shigellosis, a diarrheal infection often referred to as dysentery, or bloody diarrhea, that can lead to death (Lampel et al., 2018). It is caused by one of four species of *Shigella* bacteria; *S. boydii*, *S. dysenteriae*, *S. flexneri*, and *S. sonnei* (Thompson, Duy, & Baker, 2015). *S. boydii* and *S. dysenteriae* are not common and typically occur among travelers to underdeveloped countries, while *S. flexneri* is more common among developing countries and *S. sonnei* is prevalent in developed countries (Percival & Williams, 2014; Thompson et al., 2015). The high morbidity and mortality rates in Asia, 125 million infections and 14,000 deaths, illustrates the significant burden of this disease (Lampel et al., 2018). *Shigella* bacteria are transmitted through the ingestion of fecal matter from fingers or contaminated food or water (Aragón et al., 2007; Lampel et al., 2018). Ingestion can occur through eating/drinking contaminated food/water, inserting unwashed fingers into a mouth after coming into contact with fecal matter, and direct oral-anal sex (Mayo Clinic, n.d.; Percival & Williams, 2014). The risk of transmission is high due to its low infectious dose of 10 organisms (DuPont, Levine, Hornick, & Formal, 1989). In other words, accidentally ingesting a small amount of feces with the presence of one of four species of *Shigella* bacteria can lead to shigellosis. It has also been suggested that flies can transfer *Shigella* bacteria from feces to other objects and food (Lampel et al., 2018; Percival & Williams, 2014).

Shigella bacteria survive in different conditions and are unique to humans (Lampel et al., 2018; Percival & Williams, 2014). Once a person is infected, the incubation period occurs and can last between 36 and 72 hours (Percival & Williams, 2014). Symptoms associated with shigellosis infections include diarrhea, abdominal cramping, fever, weight loss, bloody stool, nausea, vomiting, chills, and lightheadedness (Aragón et al., 2007; Klausner et al., 2001; Percival & Williams, 2014). Symptoms can last on average for 7 days, but some have been documented to persist for up to 23 days (Klausner et al., 2001) and can require hospitalization (Wilmer et al., 2015). *Shigella* bacteria can still be excreted through feces after patients have recovered, but they are less contagious compared to the initial stages of the infection (Percival & Williams, 2014). Shigellosis tends to resolve itself completely in healthy adults after a few weeks without antibiotics (Percival & Williams, 2014). Populations affected most by shigellosis, which are more likely to need antibiotics, include children under the age of 5, the elderly, and those who are immunocompromised (Klausner et al., 2001; Gupta et al., 2004; Mayo Clinic, n.d.). One of the main concerns associated with shigellosis in these populations is the increased chance for dehydration (Mayo Clinic, n.d.; Scallan et al., 2011). Other concerns include rectal prolapse, arthritis, perforation of the intestine, inflammation of the colon, seizures, and colon paralysis (Christopher, David, John, & Sankarapandian, 2009; Mayo Clinic, n.d.; WHO, 2005).

Many infections go undiagnosed in the United States for many reasons. What has made shigellosis a disease of importance is its growing resistance to antibiotics. This is of concern for men who have sex with men (MSM) due to certain sexual behaviors that increase their risk of becoming infected. In addition, the higher prevalence of human immunodeficiency virus (HIV) and use of pre-exposure prophylaxis (PrEP) to prevent HIV may be associated. All of these variables are understudied, making this one of the groundbreaking studies of *Shigella* bacteria and

shigellosis among MSM. The purpose of this paper is to use raw data from research conducted by Georgia State University and the Centers for Disease Control and Prevention (CDC) to describe the framing of prevention messages and platforms to use in order to disseminate messages that will have the greatest impact among MSM.

Literature Review

Shigellosis in the United States

Shigellosis is an infectious disease reported to various health departments in the United States (CDC, 2017a; Wilmer et al., 2015). It is tracked through the Foodborne Diseases Active Surveillance Network (FoodNet), Laboratory-based Enteric Disease Surveillance (LEDS), National Antimicrobial Resistance Mentoring System (NARMS), National Notifiable Diseases Surveillance System (NNDSS), The National Outbreak Reporting System (NORS), and PulseNet (CDC, 2017a). Between 24,511 and 374,789 shigellosis cases are estimated to be diagnosed annually in the United States, while almost 124,805 go undiagnosed (Scallan et al., 2011). With approximately 500,000 total shigellosis cases, it is the third most common bacterial infection causing gastroenteritis documented in the United States (Gupta et al., 2004). Outbreaks of shigellosis have been reported throughout the United States including Massachusetts, Hawaii, the District of Columbia (Gupta et al., 2004), Chicago (Watson et al., 2005), New York (Drusin, Genvert, Topf-Olstein, & Levy-Zombeck, 1976; Murray et al., 2017), Oregon (Replogle, Fleming, & Cieslak, 2000), and San Francisco (Aragón et al., 2007; Klausner et al., 2001).

Shigellosis Treatment

Effective treatment of shigellosis is best when administered immediately. An antimicrobial is used to decrease the seriousness of the infection so that death does not occur, to decrease the amount of time symptoms persist, and to decrease the amount of *Shigella* bacteria present in the infected person's feces (WHO, 2005). Antibiotics that have been recommended as treatment for shigellosis include nalidixic acid, ampicillin, chloramphenicol, co-trimoxazole, tetracycline, cephalosporins, and amoxicillin (Christopher et al., 2009). Adults are recommended to take 500mg ciprofloxacin two times a day for three days as a first line of defense (WHO, 2005). As a second

line, WHO (2005) recommends 100mg pivmecillinam taken four times a day for five days, 50-100mg ceftriaxone injected once a day for two to five days, or 1.5g azithromycin once a day for up to five days. Use of the recommended drug treatments also includes side effects. Ciprofloxacin use can cause indigestion, headache, hot flashes, sweating, and inflammation of tendons (Christopher et al., 2009). Azithromycin, ceftriaxone, and pivmecillinam can all cause the same as ciprofloxacin along with diarrhea, headache, flatulence, abdominal pain, toxic psychosis, intracranial tension, and cranial nerve palsy (Christopher et al., 2009). All of these side effects mimic the symptoms associated with shigellosis infections. Repeated exposure to these drugs over time has increased the chances of *Shigella* bacteria becoming resistant to one or more recommended forms of treatment.

Cases of shigellosis documented among New York City residents between March 2013 and May 2015 were found to be caused by either *S. sonnei* or *S. flexneri* and all were shown to be resistant to ampicillin, cefixime, ciprofloxacin, and trimethoprim/sulfamethoxazole (TMP/SMX) (Murray et al., 2017). (TMP/SMX is also referred to as co-trimoxazole as it is a combination of the two drugs; MedlinePlus, 2017). Those who were infected with *S. flexneri* were more likely to be male, resistant to ciprofloxacin, and were less likely to be susceptible to azithromycin. A sample of MSM in Montreal, Canada in 2010 were found to be resistant to ampicillin, ciprofloxacin, and TMP/SMX (Gaudreau et al., 2011). Doxycycline, tetracycline, TMP/SMX, ciprofloxacin, and ampicillin resistance was found among German patients between 2010 and 2012 (Hoffman et al., 2013) and shigellosis cases from New South Wales, Australia between 2013 and 2014 were found to be resistant to azithromycin, ciprofloxacin, TMP/SMX, and ampicillin (Brown et al., 2017). Some of these cases were found to be resistant to one or more listed drug therapies. As recent as

2015, shigellosis cases in the United States have been identified as resistant to ciprofloxacin, ceftriaxone, azithromycin, or a combination of these treatments (Bowen et al., 2016).

Shigellosis among MSM

Shigellosis was initially identified as a significant public health problem among MSM in the 1970s when infections became associated with sexual behaviors among MSM (Dritz & Back, 1974; Drusin et al., 1976). The culture of sex among gay males in the 1970s was characterized as experimental and adventurous and included sadomasochism, group sex, and public sex (Escoffier, 2017). This culture was typically hidden due to social norms and the negative attitudes about homosexuality during the 1950s and 1960. However, they became more publicized during the gay rights movement of the 1970s and the co-occurring sexual revolution that emphasized swapping sexual partners, orgies, sex clubs, and “coming out of the closet” (Escoffier, 2004). MSM found sex without strings and long-term relationships to be more desirable but led to higher rates of sexually transmitted infections (STIs) (Escoffier, 2004).

Many of the early studies of shigellosis were conducted retrospectively and failed to include MSM sexual behavior and/or identity (Drusin et al., 1976). This was presumably due to the previously mentioned negative attitudes and the stigma homosexuals could experience from disclosing such information in and outside of medical facilities. During the latter part of the 1990s, Aragón et al. (2007) conducted a case-control study of patients who had a culture-confirmed diagnosis of shigellosis in San Francisco. Of the 76 patients enrolled, slightly more than half of the sample (52.6%) were infected with *S. flexneri*, while 46.1% were infected with *S. sonnei*. MSM identification and factors associated with their sexual behavior were linked to the *S. flexneri* infections. However, the two species began to alternate their prevalence among MSM. *S. sonnei* became prominent among MSM in San Francisco a year later in which symptoms lasted between

two and 90 days (Klausner et al., 2001). Other *S. sonnei* infections occurring among MSM took place in London between 2004 and 2005 (Morgan et al., 2006) and in Montreal, Canada in 2010 (Gaudreau et al. 2011). These were followed by a *S. flexneri* outbreak among MSM in England and Wales in 2011 (Borg et al., 2012). Since the CDC recommended PrEP as an effective method of HIV prevention, some MSM are more frequently engaging in unsafe sexual practices that declined during the AIDS epidemic with the push for safe sex practices.

Risky Sexual Behaviors of MSM

MSM are at greater risk of exposure to STIs due to their engagement in risky sexual behavior. HIV/AIDS and other STIs are currently more prevalent among MSM in the United States (CDC, 2017b) and are also due to risky sexual behavior. Although shigellosis is not classified as an STI, MSM were linked to shigellosis due to certain sexual behaviors prevalent among the community. Labeling shigellosis as if it were an STI could increase its awareness among MSM. There are several sexual behaviors discussed that put MSM at higher risk; however, one of those behaviors, douching, is meant for hygiene purposes. Other sexual practices that increase the risk of shigellosis include oral sex, condomless anal sex, anilingus, felching, fisting, scat, concurrent sexual partnerships, public sex, group sex, and participation in sex parties.

Douching and enema use are common practices among MSM intended to clean their anal cavities prior to engaging in anal sex. Although they are common behaviors, they are understudied in terms of sexual behaviors. The San Francisco Men's Health Study labeled them as sexual behaviors of MSM and attributed them to higher risk of infection during the height of the AIDS epidemic (Winkelstein et al., 1987). Using an enema and/or douching was practiced by more than half (52.7%) of participants and significantly predicted an infection with HIV. Noor & Rosser (2014) found the same percentage of participants whom have ever used an enema or douched.

More recently, Rice et al. (2016) found that an HIV-positive status was four times more likely among those who used an enema or douched. Plain water was most often used by participants followed by water mixed with soap, salt, or an antibacterial agent (Javanbakht, Stahlman, Pickett, LeBlanc, & Gorbach, 2014; Noor & Rosser, 2014). These practices could potentially increase risk of shigellosis by increasing the exposure to feces. Douching with water to clean out the anus moves feces from the inside the body to the outside. If people who douche do not make sure their entire bodies have been cleaned with antibacterial soap, feces could continue to remain on their skin and in crevices or skin folds. In addition, water containing feces might not have been completely drained immediately after douching and could potentially leak out at any time. If the sexual partners happen to put their mouths on body parts where contaminated water has leaked out, their risk could increase. Risk will also increase if the sexual partners touch body parts with contaminated water and then touch theirs or their partners' lips or mouths. This can include inserting their penises into the mouths of their partners after unprotected anal sex. Though oral sex on its own is not considered a high-risk behavior for shigellosis, it is high risk if it is performed directly after unprotected anal sex. In general, oral sex is by far the most common sexual behavior engaged by MSM with 99% reporting ever engaging in it (Rice et al., 2016).

Barebacking, intentionally engaging in anal sex without the use of a condom, has been found to be a sexual practice a majority of MSM engage in within their lifetime. Estimates of the number of MSM who engage in bareback sex vary ranging from 39.9% (GroV, Parsons, & Bimbi, 2007) to 90% (Rice et al., 2016). While these percentages are relatively high, GroV et al. (2007) also documented that only 13.2% of participants in their study identified as barebackers. GroV, et al. (2007) found that men who preferred to meet potential sex partners in bathhouses and on the Internet were more likely to engage in bareback sex. It is suggested that the anonymousness of the

Internet and the addition of publicly displaying HIV status on online profiles help MSM find sexual partners for bareback sex (Shernoff, 2006). The growing popularity of bareback sex within the MSM community has been attributed to drug and alcohol use, the Internet, fatigue from hearing safe sex messages, the improvements made in treating HIV (Wolitski, 2005), and internalized homophobia (Shernoff, 2006). Internalized homophobia is thought to produce feelings of unimportance which lead MSM to believe they are undervalued and expendable. These feelings influence whether or not they engage in bareback sex (Shernoff, 2006). This idea has also been supported by Bauermeister, Carballo-Diéguez, Ventuneac, & Dolezal's (2009). They found that MSM used bareback sex to cope with social vulnerabilities and to provide emotional connections with their sexual partners. The increase in the number of websites dedicated to bareback sex (Halkitis, Wilton, Drescher, & 2005) could potentially encourage more MSM to engage in bareback sex by creating a false sense of security. Watching other men engage in bareback sex in videos might make some MSM think they are less likely to acquire an STI or HIV/AIDS. In addition to bareback sex, more than half of sexually active MSM insert fingers (83%), known as fingering, and/or sex toys (65%) during their sexual activities (Rice et al., 2016). Fingers and toys that have been inserted into the anus and then into the mouths of sex partners have the potential to transfer *Shigella* bacteria.

Analingus, or rimming, is probably the most common sexual activity with the highest risk of transmission. It involves direct oral-anal contact. It is a sexual practice that almost two-thirds (62%) of sexually active MSM engage in (Rice et al., 2016) and has reportedly increased throughout the years (Prestage et al., 2005). The recipients of analingus, especially if they have douched, put their partners at increased risk of transmission if they have not completely cleaned themselves. Similar to the scenario of dirty water leaking out and the sexual partners touching it

or kissing the contaminated area, rimming ensures that fecal matter will be ingested by licking the anus and the area around the outside of the anus. The degree to which risk increases is not yet fully known and will require further in-depth investigations.

Felching is a behavior some MSM engage in that involves the top, the insertive male sexual partner, ejaculating while inside the anus of the bottom, the receptive male sexual partner, and then sucking his own ejaculate out of the bottom's anus (Blechner, 2005). Sometimes this activity includes passing the semen back to the bottom orally, referred to as snowballing (Grov, Parsons, & Bimbi, 2010). Instances of felching have been documented to occur between 10% (Rice et al., 2016) and 16.5% (Klein, 2012). According to Rice et al. (2016), snowballing practices occurred among 29% of study participants, but was not in the context of felching. For these participants, snowballing was described only as exchanging semen orally between partners. The distinction of sex acts associated with it or any explanations were not made clear. Felching in a group sex setting can involve multiple tops ejaculating into the anus of the same bottom followed by one man sucking the combined ejaculate out of the bottom's anus. This also can involve passing the ejaculate to one or several other men. Felching is a sexual behavior that has not been fully researched or published in scientific journals. Klein (2012) attempted to address this issue by investigating how prevalent felching is among MSM who use the Internet to find partners, characteristics that express a person's desire to engage in felching, the relationship between felching and other sexual activities, and what separates the men who engage in felching from those who do not. What he found was that most men who actively sought felching partners were around the age of 34, Caucasian, and preferred being bottoms or versatile bottoms. Men who engaged in felching were more likely to engage in rimming, engage in sex acts involving multiple partners, want rough sex, dislike using condoms, and eroticize semen. Men who engage in felching and/or

snowballing are more likely to be labeled as sexually compulsive and are at higher risk for HIV and other STIs (Grov et al., 2010; Rice et al., 2016).

Another understudied sexual behavior among MSM is fisting. It involves penetrating the anus with a hand or fist and can cause severe internal and external trauma (Cappalletti et al., 2016). Some men will insert their fist up to their wrist, while others will insert the entire arm into the anus of the bottom. It is mostly practiced along with bondage and sadomasochism to experience pleasure through pain and vice versa (Cappalletti et al., 2016). Rice et al. (2016) found that approximately 14% of MSM in their study reported ever engaging in fisting and those who did were five times more likely to have tested positive for HIV or other STIs. Men who take part in fisting practices do so with one sexual partner or multiple partners at once (Gilbart et al., 2015; Mimiaga et al., 2010). Sex resorts are venues that help facilitate MSM finding others to engage in fisting. Fifteen percent of MSM vacationing at one of the largest sex resorts in the southeast United States reported engaging in fisting (Crosby & Mettey, 2004), suggesting its prevalence has not changed. Fisting has also been thought to be a practice engaged in by some MSM due to erectile dysfunctions brought on by the use of drugs or to prevent HIV (Gilbart et al., 2015).

Scat play is the least common sexual practice and is also understudied. Sometimes called coprophilia, the use of excrement for sexual pleasure, or coprophagia, the eating of excrement for sexual pleasure, it is associated with feelings of pleasure during the anal stage of psychosexual development (Korasz, 2016). Only 2% of MSM have reported ever engaging in scat play (Rice et al., 2016). Korasz (2016) reported that most people who engage in scat play as adults are first exposed to ingesting fecal matter by accident. For example, bottoms who engage in oral sex immediately after bareback sex will accidentally come into contact with feces on the penises of their top sexual partners. Even if they wipe the penises with a towel or rag before engaging in oral

sex, there is still the chance that feces will remain. Another example involves rimming an anus that had not been cleaned. Korasz (2016) explains that sexual arousal becomes heightened and the feelings of disgust associated with feces disappear. The people excreting the feces are described as dominants and are believed to feel a sense of control and power over the submissives. Scat play is practiced by people in a solo sexual act or between multiple people, usually in the context of sadomasochism.

Concurrent sexual partnerships among MSM is of concern regarding the spread of HIV and other STIs through all previously mentioned sexual behaviors. Grov et al. (2010) cite research suggesting that higher numbers of sexual partners and venues encouraging sexual encounters among men make it easier for MSM to have several concurrent sexual partners. Their research findings supported this idea with 60.6% of their participants reporting having ever engaged in group sex (Grov et al., 2010). In a study investigating willingness to use PrEP, Grov, Whitfield, Rendina, Ventuneac, and Parsons (2015) found that 18% of their sample reported being in a relationship while being sexually active with a median number of 11 other male partners in the previous six weeks. Concurrent sexual partnerships increase the risk of transmitting HIV/AIDS and other STIs, especially when no protection is being used. Gay and bisexual New York City escorts were found to engage in condomless receptive anal sex with non-paying sexual partners and both condomless receptive and insertive anal sex with paying sexual partners during the same time frame (Parsons, Bimbi, & Halkitis, 2001). These escorts reported having a mean number of 24.2 non-paying sex partners and a mean number of 45.5 paying sexual partners in the previous three months. Among homosexuals alone, Jeffries (2011) found that 26.3% had six or more sexual partners within the previous year. Bohl, Raymond, Arnold, and McFarland (2009) found that 78% of MSM in San Francisco who had a primary sexual partner also had sex with other men.

As mentioned earlier, public and group sex are common among the MSM community with 68% having ever engaged in them (Rice et al., 2016). The stigmatization of homosexual sexual acts before the 1970s forced MSM to find places where they could cruise other men interested in sex with men. This led to a rise of sexual activity that took place in public spaces (bathhouses, porn theaters, piers, etc.) and frequently involved multiple participants (Escoffier, 2017). Circuit parties and gay cruises are popular events that attract thousands of MSM in today's society (as cited by Colfax et al., 2001; as cited by Mansergh et al., 2001). These parties and cruises have replaced the docks and truck stops of 1970's New York City as the place to engage in public and group sex. Circuit parties consist of themed events that last for three days, usually a three-day weekend, and end with a main dance party (Cimino, 2015; Colfax et al., 2001). Circuit parties are typically promoted to and attract a certain type of person; young, white, gay males who are tanned, muscled, and tattooed (Cimino, 2015). Being part of the "circuit" means travelling and attending the various circuit parties held throughout the world (Colfax et al., 2001). The circuit starts in January with the Blue Ball in Philadelphia. It is followed by Chicago's Fireball in February, New York's Black Party in March; the White Party in Palm Springs in April; the Cherry Party in Washington D.C. and Dallas' Purple Party in May, and ends with Halloween in New Orleans (Cimino, 2015). Other popular parties are held in Montreal, Orlando, South Beach, San Francisco, Australia, Rio de Janeiro, Spain, and Israel (Cimino, 2015). Drug use among circuit party attendees has also been documented. Mansergh et al. (2001) found the mean number of drugs used during parties was 3, but Colfax et al. (2001) found that the mean number of drugs used was 4. Both found the most popular drugs used to be GHB/GBL (gamma hydroxybutyrate/gamma butyrolactone), ecstasy, ketamine, crystal methamphetamine, and alcohol. Bareback sex among serodiscordant sexual partners and sexual partners who were not aware of each other's serostatus was also more

prevalent during circuit parties (Colfax et al., 2001; Mansergh et al., 2001). It is possible that the increased use of drugs during circuit parties is a contributing factor for engaging in both bareback sex and sex with multiple sexual partners.

Men who participate in group sex parties report attending based on the theme of the party, the idea of having a fun time, to engage in a variety of sexual behaviors, voyeurism (Mimiaga, et al., 2010), and/or to experience specific sexual behaviors (fisting, water sports, etc.) (Gilbart et al., 2015; Mimiaga et al., 2010). The use of hook-up apps and social media sites have been documented as mediums for advertising such events (Colfax et al., 2001; Gilbart et al., 2015; Mimiaga et al., 2010). Some parties last several days and include fisting and scat play. An investigation of group sex parties in Massachusetts found that the number of attendees ranged from 5 to 45 and that the mean number of parties attended by participants was 10 (range 1-50) (Mimiaga et al., 2010). Older participants reported a sense of community among attendees because attendees were there for one thing and knew they would get what they were there for. There was no judgement based on ethnicity, age, HIV status, drug use, or sexual behaviors. Drugs to lower inhibitions are widely available and used among group sex parties and bathhouses (Gilbart et al, 2015; Mimiaga et al., 2010). This also means that a large number of participants engaged in unprotected anal sex without having a discussion of sexual history or serostatus and engaged in drug use, known as “party and play” or “PNP”. Discussions of sexual history and STI/HIV status were abandoned because they did not want to ruin the mood; rather, they wanted to have sex (Mimiaga et al., 2010). The most often used drugs included poppers, marijuana, cocaine, crack, crystal methamphetamine, and erectile dysfunction drugs such as Viagra, Cialis, or Levitra.

PrEP is allowing more MSM to freely engage in unprotected anal sex with multiple sexual partners by removing the fear associated with HIV/AIDS infections. This is changing the way in

which MSM behave regarding sexual behavior. PrEP is a prescription that is taken orally once a day, every day to prevent HIV infection in HIV-negative people (FDA, 2013). There is some concern surrounding the efficacy for some users' ability to adhere to the recommended usage of PrEP and that PrEP use may lead to more people engaging in risky sexual behavior (Curran & Crosby, 2013; Doblecki-Lewis, Cohen, & Liu, 2015; Schwartz & Grimm, 2017). Those who attend circuit parties, sex parties, and bathhouses may believe that the use of PrEP prevents them from being at risk for acquiring STIs/HIV. This belief was supported by MSM in New York City. Those who would use PrEP believed they would engage in bareback sex more often, had a higher number of sexual partners, perceived lower consequences to bareback sex, and were more likely to be diagnosed with hypersexual disorder (Groves et al., 2015). It is possible that MSM believe there is less risk in engaging in unprotected anal sex while on PrEP because most other STIs are curable and treatable or manageable. This type of reasoning is concerning because it exposes more MSM to numerous STIs and the antibiotics used to treat them. Similar to shigellosis, the likelihood of other STIs becoming resistant to antibiotics increases. There is a recent case of gonorrhea reported in England that has a high-level of resistance to azithromycin and is resistant to ceftriaxone, the recommended first line, dual treatment (PHE, 2018). Treatment is currently ongoing and more information will be available in the following months. Both of these antibiotics have also been recommended for the treatment of shigellosis.

Shigellosis and HIV

Shigellosis has been documented among MSM who are HIV-positive and is more prevalent among this subgroup (Aragón et al., 2007; Klausner et al., 2001; Wilmer et al., 2015). An outbreak of *S. flexneri* 3a in England among MSM identified 20 out of 32 to be HIV-positive (Gilbart et al., 2015). It is thought that *Shigella* bacteria are more likely to shed due to HIV infection (Aragón et

al., 2007). It is possible that shigellosis is more commonly found among HIV-positive patients because they are more likely to seek medical attention for bouts of diarrhea and other health concerns. Patients in New York City who are HIV-positive have also been documented to be infected with strains of *Shigella* bacteria resistant to ciprofloxacin (Hoffmann et al., 2013; Murray et al., 2017). It is important that this subgroup is treated immediately and effectively when infected with *Shigella* bacteria because their bodies cannot fight the infection the way HIV-negative people can.

The many sexual behaviors MSM report engaging in that can be high-risk for transmitting *Shigella* bacteria indicates a need for prevention that targets the intra- and interpersonal levels of an ecological framework. Understanding the social and sexual networks of MSM requires their evaluation of their community and what is of high importance to them in order to effectively create a prevention plan.

Methods and Procedures

Data was collected via focus groups as part of a larger study to assess how MSM perceived *Shigella* bacteria and shigellosis and what types of messaging they think would be best to inform the MSM community. The study was a collaboration with Georgia State University and the Division of Foodborne, Waterborne, and Environmental Diseases at the Centers for Disease Control and Prevention (CDC). IRB approval was granted by Georgia State University on August 24, 2017.

Active recruitment consisted of research assistants passing out flyers and talking to potential participants about the study during a gay pride festival held in a public park in August 2017 as well as asking friends who identified as gay to participate. Passive recruiting involved hanging up flyers in coffee shops, a bathhouse, inside the offices of a medical group that caters to MSM, and in several gay bars throughout Midtown, Atlanta and Decatur, Georgia. Inclusion criteria included being 18 years of age or older, identifying as a gay or bisexual cisgender male, and having engaged in sexual activity with another male in the previous three months. Other demographic information obtained after identifying eligibility included education level, race/ethnicity, if social media apps were used to meet other men, and which ones.

Focus groups were conducted in November and December 2017 at Georgia State University in Atlanta, Georgia. Public transportation cards were issued to participants who relied on public transportation and parking was provided for those who drove. There were six groups with a total of 24 participants. All participants signed a consent form and were asked to select a pseudonym to be referred to during focus groups. So they could remain anonymous and help ensure their confidentiality, all focus groups were recorded and transcribed. Participants were given a \$40 gift card for participating.

The principle investigator from Georgia State University moderated all but one focus group; a graduate research assistant conducted one. Focus groups lasted approximately one hour. Ground rules for focus groups were outlined and a moderator guide was used to ensure consistency between groups. Participants were asked to introduce themselves and identify their favorite type of music and favorite tv show as icebreakers. Initial questions asked of participants to get them comfortable with talking included what sources they preferred to use to find health-related information, how they chose their primary care doctor, and what sources they trusted for sexual health information. The moderator then asked if anyone had ever heard of *Shigella*. After reading a brief description, participants were asked what their initial thoughts were, if they believed men like them were at risk, if they would tell their sexual partners if they had diarrhea, and if they would ask their sexual partners if they had diarrhea. Participants were then asked what messages needed in order for them to grab the attention of MSM and be remembered and where those messages needed to be visible. They were also asked what their opinions were about labeling shigellosis as an STI. Flyers created by the CDC, the San Francisco Department of Public Health, the Baltimore City Health Department, and two ads created for websites were given to participants to read through. Participants were asked to identify words and/or phrases that jumped out at them, anything that was unclear or confusing, and their impressions of the flyers.

An outside company was hired to transcribe audio files. Research assistants used audio files of the focus groups to clean typed transcriptions. Four research assistants were responsible for developing a coding book. Meetings were held to discuss the main themes revealed during focus groups. The main themes also included sub-themes that needed to be captured and defined for the coding book. Consensus was reached among the four of them before moving from one passage to the next. The transcript from focus group 3 was used by the four research assistants to

develop initial codes. Once codes had been developed, MaxQDA statistical software was used to analyze the data.

The purpose of this capstone is to use the raw data collected to recommend the best venues for disseminating information about *Shigella* bacteria and shigellosis based on theoretical approaches for health promotion.

Results

The majority of participants heard about the study through a friend (17 out of 24; 70.8%), while others heard about it via flyers posted in coffee shops, a bathhouse, and a medical provider's office that caters to the MSM community. The mean age of participants was 36 (SD \pm 9.8; range = 21-59). Thirteen (54.2%) participants identified as African American, nine (34.5%) identified as Caucasian, two (8.3%) identified as Latino/Hispanic, and all but one identified as a gay, cis-gendered male (one identified as both a bisexual male and as transgendered). In addition, all had engaged in sexual activity with another male within the previous three months and all had used a dating/hook-up app to meet other men. The majority of participants (17; 70.1%) used Grindr. Other apps that were used included Jack'd (12; 50%), Tinder (9; 37.5%), Scruff (6; 25%), GROWLr (2; 8.3%), Hornet (1; 4.2%), Adam4Adam (1; 4.2%), Craigslist (1; 4.2%), and MeetMe (1; 4.2%). The median number of hook-up apps used per participant was 2 (range 1 – 6).

Almost 17% of participants (n = 4) had previously heard of *Shigella* bacteria or shigellosis before attending a focus group and those who had knew very little about it. Although each group mentioned different themes, the main themes discussed by a majority of groups included inclusion of other groups to avoid stigmatization; using humor, curse words, colors, and images for effective messaging; and linking *Shigella* bacteria to HIV/AIDS to increase the perceptions of the disease's seriousness. Participants most often identified restrooms in gay bars/clubs, social media sites, dating/hook-up apps, sex clubs, and doctors' offices as the most effective places to place informative material about *Shigella* bacteria and shigellosis. In addition, focus group participants made mention of tailoring messages to different subgroups within the MSM community based on sexual behaviors or fetishes (e.g., those who engage in scat play, those who do or do not frequent clubs). Behaviors that were discussed among participants included douching, rimming, fisting,

scat, oral/anal sex, and fingering. A small number of participants mentioned doing a “sniff test” before engaging in rimming and/or oral/anal sex to detect the presence of feces. Sniff tests were mentioned only when participants referenced hooking up with a random sexual partner. The evolution of gay culture was also discussed in terms of drag queens, public sex, and the increased popularity and social norm of technology use. Drag queens were mentioned regarding their use of humor and cattiness to talk about messages that would grab people’s attention. One participant reported sticking his finger in people’s butts while they were on the dance floor in a club.

Stigma was addressed by almost every participant in one form or another. Whether it was stigma due to negative views of homosexual behavior in the general population or the HIV/AIDS epidemic over the past several decades within the gay community, stigma toward MSM due to something else (*Shigella* infection) was a concern. When asked if information revealing that *Shigella* is more common among gay and bisexual men than other populations, especially among HIV-positive men, one response was:

“Um, because anal sex occurs in straight couples as well so, um, I’d like to know what the numbers are in heterosexuals about this. Um, I guess because of what the gay community has faced over the last several decades, um, maybe I have a tendency of looking at things a little more critically. Um, it’s slightly, it’s slightly offensive to me for some reason, um, because it’s such a targeted population. But obviously studies do that, you have to do that to narrow things down, but I’m just being honest about what popped in my head.” (Griffin, 45)

When asked to elaborate a little further, he went on to say:

“Simply because it only talks about being bisexual and, um, gay, which I think could potentially further perpetuate stigma and this is only something that gay men and bisexual men get. Because whether we like it or not, we’re human and we generalize.” (Griffin, 45).

Other responses included:

“And I can see a lot of straight people getting this and saying, ‘Oh, gay people have another disease.’” (Chris, 21)

“Include everyone, like, just not gay and bisexual, like women, everybody.” (Mario, 28)

“I don’t think gay and bisexual men should be the only one targeted. I believe the heterosexual people should know about this also, cause they have anal sex and they do anal penetration...” (Fruit, 23)

However, not all participants shared in this view.

“It didn’t bother me. Or I don’t really feel stigmatized by it cause I know like a lot of gay men have a lot more partners than straight couples do. So we do get singled out cause we have a lot more sex. So it doesn’t really, I’m used to getting information directly, so for me it doesn’t bother me.” (Aiden, 44).

The amount of words used to educate people about *Shigella* seemed to be of importance to participants. The word “busy” was used to describe some of the sample flyers created by health departments from San Francisco, Baltimore, CDC, and two web-based ads. Participants believed that messages needed to be easily digested and understood in the shortest amount of time as possible.

“If you keep everything short and simple, that message would get over easier, I think, to people compared to trying to give them all the information at one time.” (Deon, 43).

“I think it’s too busy. I think both of these are too busy. They need to be more simple and allow you to go somewhere to get more information.” (Matt, 47)

“I can’t even read through this whole thing. I mean, there’s too many words, so I automatically shut it off.” (Griffin, 45)

“Too. Much. Text. We are in a world where if someone’s Facebook post is more than three sentences, we skip it. It’s gotta be pretty easily consumable within five seconds.” (August, 43)

“This one seems too busy. Too much reading, yeah, this doesn’t get to the point. This gets to the point immediately.” (Calhoun, 53)

Humor and being “catty” were message framing strategies participants suggested most often to catch people’s attention. Participants believed messages that were funny would have the greatest impact in catching people’s attention. However, when discussing the life-threatening aspect associated with HIV-infections, it was believed that humor would not be appropriate.

“Something kind of funny, catty, maybe some kind of drag queen stuff. Something to get people interested so that it would go viral, you can get the message out and then go further.” (Aiden, 44)

“For something like this, I think you’re gonna have to add something that’s comedy, um, to attract the people, um – Cause if you come directly, I think it’s going to be a complete turnoff. You’re gonna have to laugh about it or something.” (Rose, 27)

“Well, I wouldn’t connect the lethal with the funny. I would do the funny if it’s not lethal and keep it serious if it’s lethal. Making it funny if it’s lethal I think would just be poor taste. That’s a personal opinion.” (Bradley, 43)

Certain words and images were thought to be more effective than others. Sample flyers that included the words “attention” and “shit” were found to be more favorable. Phrases participants liked included “Reading this may save your ass” and “Stop this nasty piece of ~~shit~~ shigella”. When explaining, the main idea was that these words and phrases caught their eye and compelled them to read further. The word “shit” was thought to be more effective because “poop” comes across as “too mild”. Creating an uncomfortable feeling was also suggested.

“It draws the attention in more just with the first few words of it, pulls you in. ‘Reading this may save your ass.’ It’s kind of just, it’s not just your typical flyer.” (Aiden, 44)

“Because it says ‘attention’. I’m gonna wanna know what that’s about. And I’m gonna see ‘shit’ and ‘shigella’ and I’m gonna be like ‘What’s that?’” (Matt, 47)

“I think that the use of that word, ‘shit’, it’s very closely the first part of *Shigella*.” (Doug, 43)

“Well, I mean look at the name, Shigella. I mean, it looks like “Shitella!” (Shilo, 36)

“You have to make things uncomfortable for people to pay attention to it and the only reason I say that is cause... most people carry something from someone they just met. People, most people don’t carry diseases from people they’ve been with for years. Somebody you done cheated on that person with, or they cheated on you with, so you have, in this gay lifestyle, you have to make things uncomfortable for people to wake up. Cause with the wash your hands, you see that at the restroom when you go to a restaurant. That don’t mean everybody wash they hands.” (Courage, 31)

“Fear opens your eyes.” (Fruit, 23)

One of the sample flyers made use of the words “health alert” to grab people’s attention. This was not considered to be effective among some participants. It also brought the negative emotions associated to the beginnings of the HIV/AIDS epidemic.

“‘Health Alert’ also seems temporary, like boil your water for the next day versus some sort of ongoing or increasing thing that’s happening in the community. Yeah, ‘Health Alert’ makes me think I’m gonna boil my water over the next day because a pipe burst or something.” (Matt, 47)

“Cause that’s a little more reminiscent of some of the ads and things you might have seen back in the 80’s related to AIDS. Um, which is an automatic put-off, at least for me, um... Like the bold red letters of ‘Health Alert’. I remember seeing when I was really young, I can’t remember if it was on tv or in the newspaper, but it was something along the lines of gay cancer and it was in big red letters just like that. And it just stuck in my head. I don’t know, my whole life I think I’ll always remember that.” (Griffin, 45)

The use of the color, especially red, to emphasize the urgency or seriousness was also mentioned by several participants.

“Cause what it looks like if it’s like, uh, like a, uh, amber alert or something.” (Tony, 28)

“Cause I’m from a small city. So, if there was anything that had to go out, it would always be in red and white; and alert, urgent. So, this one stands out to me.” (Courage, 31)

“but this one, just a normal person walking by, first thing they’re going to see, they’re going to see it’s red, they’re gonna see ‘attention’, and they’re gonna see ‘shit’.” (Tee, 32)

“I guess we can socialize, the red is telling you to stop, you’ve gotta pay attention, so it just jumps out at you.” (Calhoun, 54)

“I do want to emphasize the second one here, the two for ads as Facebook posts, the ‘Health Alert’ on the toilet paper. Again, I guess because it’s in red and we’re kind of conditioned to know red is either danger or stop. That really jumps out as well.” (Doug, 43)

Images were also endorsed by participants. Images that portrayed diversity and sex appeal were most often mentioned. The idea that sex sells is still popular.

“I think it should, well, I think it’d be a very diverse group of people, but it has to show so everybody can relate to the picture. Skin color...and even economics.” (Calhoun, 53)

“I mean, like, the like, this, this one was well did, cause I think those are black hands right there, then the Asian guys, and then the white guys. All we needed was a black men, a black guy at his toilet.” (Pink, 34)

“A shirtless guy. Sex it up some.” (Griffin, 45)

“Well, if you see this shirtless hunk who’s, you know, looks healthy because we’re all about how things look, then, you know, yeah. You can have it and look just like this guy. It’s not like jaundice where he’s yellow, it’s not like you’re looking at somebody maybe who’s like you that you could have it. I don’t know, because, you know, you have people who make those associations about what the disease looks like.” (Matt, 47)

“Put, like, a chocolate emoji.” (Fruit, 23)

However, images of sexual activity engaged by MSM that transmit shigellosis was not considered to be effective and was related back to stigmatization of MSM.

“Um, I wouldn’t go too far into that. I’d hate for those kinds of things to be out there and leak into the straight community. I think it really gives a bad perception of the gay life.” (Aiden, 44)

“Not explicit pictures. Just, when you, something’s gotta grab your attention and if you can convey a thought with images, people remember the images more than the text.” August, 43)

Dating and hook-up apps were widely suggested platforms for delivering messages about *Shigella* and shigellosis. Some participants referred to social media sites but mentioned dating and hook-up apps when asked to be more specific.

“Jack’d, Grindr, GROWLr.” (Deon, 43)

“I think you should get into those, um, those gay chat rooms...as many as you can pull out of a hat. Yeah, whether it be on Grindr or, um, Jack’d or, uh, any of the others.” (Calhoun, 54)

“I really like the ide though of what Calhoun was saying as far as the, uh, dating apps, the quote-unquote “hook-up apps” that a lot of gay men use, whether it’s Grindr, Scruff, Jack’d or whatever is, because they’re, those apps tend to be, um – and sex is going to be top of mind.” (Doug, 44)

When participants first heard about *Shigella*, the prominent feeling was that it was no big deal because it was curable. Participants believed that people would just brush it off because they could just go to the doctor and “get a shot” to treat it and relieve them of the symptoms. The perceived risk, or threat, of being infected with *Shigella* and its severity was low compared to the severity of HIV. That changed when participants learned of its seriousness among people who are HIV-positive. They believed that the increased severity of shigellosis in combination with HIV was something that needed to be addressed and was not addressed in every sample flyer handed out.

“There’s something different with this, that I’m noticing on this that I haven’t seen, and that we haven’t really discussed. It says that it’s life-threatening especially if you’re living with HIV. So that changes the perception of the longer term...If this is very likely to happen with people with HIV, then that needs to be much more the outreach like you’re talking about. Like, people with HIV going out and saying, ‘If you have HIV, this can cause, this can, significantly, kill you’. Yeah, then it’s significant.” (Bradley, 43)

“So that changes the priority of its relevancy now, you know what I’m saying? Because if you are living with HIV, then that is something that can potentially kill you, if not treated.” (Deon, 43)

“I think once you link things to HIV, it tends to get more attention. Um, because I know a lot of people even kind of downplay chlamydia and gonorrhea because they can be treated. But like I said, once you saw the HIV connection, then it’s like, ‘Oh, well my perception is a little different.’” (Blake, 27)

Electronic messaging was not the only medium participants suggested messages about *Shigella* should be utilized. Other options included flyers hung in bathhouses, in bathrooms at gay clubs, in magazines, and in doctors’ offices.

“I definitely think what we said earlier about seeing stuff, especially in a, in a, male bathroom since it’s predominantly, you know, transmitted, is the little display marquees above the urinals and the floats, a little flash of the red, ‘Attention’.” (Doug, 43)

“I think it’s, I think the bar would be better because you’ve got a captive audience. Whereas in the app, if it pops up in Grindr, you get an option to automatically, you know, just delete it. And usually I didn’t read the pop-ups. I just kind of delete through it. I don’t know if other people actually read that stuff.” (Aiden, 44).

“I think they oughtta have a notification like this in sex clubs, on the bulletin board.” (Chip, 59)

“Like put ads up in the bathroom like he was saying in front of urinals. You just put it in the gay bars, they can just read it as they pee.” (Aiden, 44)

“I mean, I guess a lot of people these days are looking at their phones when they’re in the restroom taking a pee, but, you know, I still look at what’s on the walls. If there’s some sort of ad or something I still, you know.” (Matt, 47)

Recommendations

Messaging

Messages that elicit a fear response have been used for many years. The Health Belief Model (HBM), the Protection Motivation Theory (PMT), and the Extended Parallel Process Model (EPPM) all have a fear or perceived threat component as a determinant of behavior or behavior change. These are all taught as part of the curriculum for public health students with a concentration in health promotion and behavior. The HBM and the PMT use the concept of perceived threat along with an analysis of the costs and benefits associated with a behavior to explain why people do what they do and attempt to change that behavior (DiClemente Salazar, & Crosby, 2012). The EPPM revolves more around the communication of fears and how people respond to them (DiClemente et al., 2012). Using fear was suggested by participants as a way of getting people's attention about shigellosis.

The most known and successful attempt at using the appeal of fear to its advantage is the anti-tobacco industry. The use of fear in association with attitudes towards smoking has been shown to be successful for the truth[®] campaign (Richardson, Green, Xiao, Sokol, & Vallone, 2010) and the *Tips*[®] ads (CDC, 2017c). Youth in Florida were less likely become smokers six months after becoming aware of advertisements belonging to the truth[®] campaign (Sly, Hopkins, Trapido, & Ray, 2001). Regarding STIs, the perceived threat or susceptibility of the disease has to be high enough to trigger a fear response. For students at Iowa State University, they perceived their susceptibility to contracting an STI from random sexual encounters to be low (Downing-Matibag & Geisinger, 2009). They reported trusting their partners because they were acquainted for a period of time and they perceived a low prevalence of HIV existed within their community. These perceptions and the idea that safe sex would lower their chances of hooking up or experiencing

pleasure from it explained their low efficacy in practicing safe sex. Some people also experience unrealistic optimism and believe they are at less risk of contracting HIV and other STIs compared to others (Gold & Auote, 2013). This idea was supported by anecdotes focus group participants mentioned about getting a shot to cure an STI and taking PrEP to prevent HIV/AIDS. The use of fear to target MSM about *Shigella* bacteria and shigellosis might not be as useful due to the fact that it is treatable and is not as life-threatening compared to HIV/AIDS. This idea of refraining from the use of fear tactics has also been suggested for public health officials regarding STI prevention messages (Brandt, 1987). In addition, HIV/AIDS is now a manageable illness as HIV-positive people are living longer compared to the many deaths due to complications with HIV since the beginning of the 1980s.

An effective model used to change behavior among public health professionals is the Elaboration Likelihood Model of Persuasion (ELM). Petty and Cacioppo (1986) introduced the ELM to describe how attitude change is a result of persuasion from two routes, the peripheral route and the central route. The ELM highlights the cognitive aspects people use to comprehend messages and the arguments within them. When cognition is high, the central route is dominant and attitude change is more likely to have an effect on behavior. The peripheral route is marked by low cognition and uses unrelated cues, such as word-of-mouth recommendations or reputation, to interpret messages. This route tends to lead to temporary attitude changes. Zha, Yang, Yan, Liu, and Hunag (2018) found that both routes have significant effects on attitude change. For the central route, those who had a higher ability to focus on information presented to them were more likely to have a favorable attitude if the information presented on social media was of high quality. In terms of the peripheral route, those who had a lower ability to focus were less likely to have a favorable attitude toward information presented on social media unless they used the reputation of

the social media site to make a decision. The ELM has been found as a useful model for describing the process of selecting a physician. Central route processing is typically the dominant route in choosing a physician for treatment of a disease for people with a high ability to cognitively process disease information (Cao, Liu, Zhu, Hu, & Chen, 2017). It is possible that many people use the peripheral route more often by asking for doctor recommendations from those in their social network. This could be supported given that some focus group participants mentioned asking their social networks for recommendations on who they believed were trustworthy physicians and easy to talk to about sexual health concerns.

Messages created using the ELM need to cater to both the central or peripheral routes. Kreuter and Wray (2003) distinguish between targeting and tailoring messages when using the ELM. Targeted messages are directed to a subgroup of a population, while tailored messages are based on attributes that are perceived to be more relevant to a particular person or group within a subgroup. For example, targeted messages would be directed toward MSM who live in the Midtown, Atlanta area, while tailored messages would be aimed at MSM who live in the Midtown, Atlanta area and who frequent sex clubs. They suggest that tailored messages may not be as effective as targeted messages when attempting to educate a specific group of people about health problems they are not aware of or do not understand well.

Targeted messages of *Shigella* bacteria and shigellosis will be effective for certain locations mentioned by participants through use of the peripheral route. Colors, images, or the information source's reputation will catch their attention and may influence them to learn more about the subject. These messages can be delivered through social media apps, dating apps, or flyers posted on bathroom walls of gay clubs and bathhouses. They also have to appeal to the readers' emotions in order for them to want to learn more about *Shigella* bacteria and shigellosis.

The cognitive process of the central route will be more useful for those who have the time and motivation to learn about *Shigella* bacteria and shigellosis. Other electronic approaches and magazine ads will only be effective in environments that are conducive to thinking about the *Shigella* bacteria and shigellosis; such as doctors' offices, the CDC website, or a website dedicated to *Shigella* bacteria.

Electronic Media Approach

The Internet is the most widely used tool to search for information. According to Pew Research Center, 59% of adults living in the United States have taken to the Internet to search for health information (Rainie, 2013). Data from focus groups showed that 46% of participants reported searching the Internet for health information. People who search the Internet for health information report that it had an effect on how their illness was treated, changed their health managing behavior, and prompted them to ask questions of their primary care physician (Rainie, 2013). Of the adults who searched health information, 31% received information through their mobile phones either through text messages or health apps (Rainie, 2013).

In addition to health information, the Internet is one of the most used tools to search for sexual partners (Blackwell, 2008; Grov et al., 2007) and group sex parties (Mimiaga et al., 2010). Homosexual men have been found to use the Internet to search for sexual partners compared to heterosexual men and women (Bolding, Davis, Hart, Sherr, & Elford, 2006). People now have the ability to use smartphones to share information they find with multiple people in a short amount of time. In addition to sending text messages, smartphones can be used to email health information to others, to receive health information notifications pushed from mobile apps, and disseminate health information via social networking sites such as Facebook, YouTube, and Twitter. Among researchers, health information presented online was the most researched subject between 2008

and 2012 followed by telemedicine and online social support (Hu, 2015). The idea of using electronic media is not about what platforms to use; rather, it is about how to get people to use those platforms and process the information presented about *Shigella* bacteria and shigellosis.

Text messages

Interventions using text messages have been found to be effective for smoking cessation, managing diabetes, adherence to HIV medication, and sexual health (as cited by Reback et al., 2012). Nine percent of American adults have reported receiving health messages via text messages (Rainie, 2013). Reback et al (2012) conducted a study using text messaging to reduce methamphetamine use and risky sexual behavior among MSM living in Los Angeles County. The intervention was called *Project Tech Support* and was found to be effective at reducing both outcomes. Participants received up to three text messages for two weeks that were based on one of three theories; Social Support Theory, Social Cognitive Theory, or the HBM. For the purpose of sexual health information, text messaging might be a possible source for MSM if the messages came from a source they gave their information to. Physicians now have the ability to text appointment reminders to patients and can use the same technology to spread health information. Primary care physicians could utilize text messages to warn their patients about the rise of shigellosis in their communities or present information about shigellosis as an STI. Studies investigating sexual behavior and/or sexual health could also send information to their study participants, those who consent to receiving health updates and alerts, about new sexual health discoveries. Messages from these sources are likely to elicit both central and peripheral routes of processing. Those who receive texts are more likely to talk about *Shigella* bacteria and shigellosis because it is new information. Several focus group participants reported their intentions of telling

their friends about *Shigella* after learning about it. Some of them even sent texts to their friends to spread awareness.

This assumption is also supported by the Diffusion of Innovation theory. This theory explains how information, ideas, and/or behaviors spread through social networks by the use of highly influential peers and the social systems they belong to (DiClemente et al., 2012). At least one person in the social system needs to be willing to reject the norm and try a new behavior in order for a behavior to spread or diffuse. This is one of the same characteristics that separates those who volunteer for research studies from those who do not (Rosenthal & Rosnow, 1975). Other characteristics that describe research volunteers include extraversion and conscientiousness (Lönqvist et al., 2007). Focus group participants would be successful at helping reduce the risky sexual behaviors of their peers because of the similar characteristics between research volunteers and influential people. Those who are more influential at spreading information and/or behavior tend to be more influential among people their own age or younger, male, and single (Aral & Walker, 2012). They are also more likely to adopt behaviors that are not considered social norms or “natural influences” (Aral & Walker, 2012).

Hook-up apps

Hook-up apps have become more popular and are a convenient way for MSM to meet each other for the purpose of having sex. It has been reported that MSM who use dating and hook-up apps are more likely to have more sexual partners and engage in sexual behaviors that put them at increased risk of acquiring STIs (Lehmiller and Ioerger, 2014). MSM who were diagnosed with shigellosis in England reported meeting their last sexual partners via hook-up apps that use geolocation software (Gilbart et al., 2015). This was one of the top three most commonly suggested platforms for messaging MSM about *Shigella* and shigellosis among focus group participants. The

use of pop-up banners and ads to share health information and advertise upcoming events is a feature in most hook-up apps. Some apps allow users to block pop-up banners only if they subscribe and pay an annual or monthly fee to be a member of that hook-up app. This might be problematic in educating some MSM who pay for apps and would be more effective in print form. However, it can be addressed by having an ad about *Shigella* and shigellosis automatically pop-up when launching the app. For members who decide not to pay a fee, they have no option to block ads that pop-up and some ads have to run for a certain amount of time before they can be dismissed or ignored.

An advantage to using dating and hook-up apps is the use of geolocation software. Ads can be designed to pop-up on certain apps when users are in a certain location or within a designated distance. For example, dating and hook-up apps can be set to deliver *Shigella* and shigellosis ads to users who sign-in in areas where circuit parties are scheduled to occur. The ads can also be targeted to users who sign-in during the times of circuit parties, but also if they are within a predetermined distance from a particular venue hosting a party. Cities that do not host large-scale circuit parties can utilize the geolocation services for those who sign-in to a dating or hook-up app within a specified distance of a doctor's office or hospital. Geolocation technology could possibly be beneficial in targeting MSM due to the popularity of geolocation apps among MSM to find sexual partners to engage in bareback sex, fisting, scat play, chem sex, and sex parties (Gilbart et al., 2015).

Social media

A second highly recommended platform suggested by focus group participants to deliver messages was social media. Knight, Karamouzian, Salway, Gilbert, and Shoveller (2017) conducted a review of literature addressing online interventions for the prevention of HIV and

other STIs. All 17 articles included in their review focused on interpersonal-level knowledge acquisition to reduce risky sexual behavior. Messages developed to increase knowledge acquisition among participants were delivered via texts, pictures, cartoons, videos, message boards, and instant messaging through Facebook. The authors make mention of a game in which an avatar simulation helped to reduce feelings of sexual stigma among young adult MSM. Social media platforms such as Facebook, YouTube, Twitter, and Instagram can make use of all these formats. Message boards are part of Facebook and Twitter; pictures, cartoons, games, and videos are popular among Facebook, Twitter, and YouTube users; and instant messaging is used among Facebook and Twitter.

Messages posted on social media need to make sure the information presented is easily understood by the numerous people who could possibly see and share them. When investigating message framing regarding the use of PrEP, Underhill et al. (2016) found that participants had a difficult time understanding estimates of efficacy rates and believed their own personal self-efficacy was different from the self-efficacy results found among study participants during clinical trials. In addition, participants reported preferring information that was presented in the form of percentages rather than phrases such as “generally effective” or “highly effective”. The idea of using numbers to catch people’s attention was supported by some focus group participants when they discussed seeing a billboard with the number of deaths attributed to HIV/AIDS. Statistics in prevention messages need to be easy to read and understandable in order to be most effective.

Facebook and YouTube have been found to be the most popular social networking sites by Pew Research Center (Smith & Anderson, 2018). Facebook was reported to be used by 68% of Americans and YouTube was reported to be used by 73%. However, the number of Facebook users might decline due to the controversy surrounding Cambridge Analytica’s recent theft of personal

information from Facebook profiles. In addition, the same report found that the median number of Americans between the ages of 30 and 49 have a profile on three different social networking sites, while 18-29-year-olds use a median of four social networking sites. Twitter has been identified as an effective means of addressing issues regarding barriers to PrEP use as well as stigma toward PrEP users (Schwartz & Grimm, 2017). Twitter users have the option of “favoriting” and sharing messages (tweets) to open discussions about topics of interest. This encourages communication about PrEP and can potentially encourage people to have conversations about it with their healthcare provider.

Placing ads and videos on these platforms would give people the opportunity to spread the word about *Shigella* bacteria and shigellosis among their social and sexual networks. Users who share this information could possibly be characterized as conscientious and/or extraverted and would most likely be labeled as an influential peer. They could possibly be early adopters who help their social and sexual networks become more aware of *Shigella* bacteria and the sexual behaviors that put them at risk. Ads and videos would need to include people from all backgrounds, contain catchy phrases to get people’s attention, and make use of humor to make people remember it. Several ads and videos can be created and tailored to different segments of the MSM population. Groups can be segmented based on age, education, or hook-up app preference and each segment can receive different ads and videos. In addition, informative ads and videos that can be shared by social media users could educate other vulnerable groups such as those who have young children or who care for elderly family members.

Print Media Approach

Targeted messaging about *Shigella* bacteria and shigellosis can be delivered to a broad population of MSM in the Atlanta area. Magazines in doctors’ offices were mentioned by many

participants because participants had time to sit and read them while waiting to see their doctor. This time would allow for their cognitive abilities to digest the information presented to them and allow for behavior change. In addition, gay publications are widely circulated throughout midtown Atlanta and are available for free. These magazines list events throughout the city; gay bars' hours of operations, drink specials, and themes for each night of the week; medical practices and services they offer; and pictures of people who have attended LGBT events, just to name a few things. MSM in Atlanta have their choice to pick up a copy of Peach Atlanta (formerly David Magazine), Fenuxe, Georgia Voice, and Goliath Atlanta.

Messages can also be tailored to those in the MSM community by specific sexual practices. Those who engage in group sex could potentially be alerted through magazines that advertise and cater to events in which group sex occurs. A magazine produced by Circuit Noize is published every 3 months promoting circuit parties. Space can be bought in their publications alerting attendees of the potential risk and what symptoms of shigellosis include. This would give circuit party attendees information about safe sex practices without ruining the heightened mood or moment experienced during group sex and/or circuit parties. Some men who attend circuit parties and used condoms have noted that they were previously made aware of how to party safely while in attendance (Mansergh, 2001). Advertising in this type of magazine would allow circuit party attendees to be informed prior to engaging in risky sexual activity rather than attending parties and softening their mood while trying to hook-up.

Data from focus groups made mention of ads placed on walls in sex clubs and in the restrooms of gay bars. It is believed that men will notice flyers on the wall above a urinal while they are urinating rather than on the walls by bars inside the gay bars. Specific to Atlanta, some locations that might benefit from having posters warning about *Shigella* bacteria and shigellosis

include Flex, a bathhouse located in Midtown; Manifest4U, a private sex club for men only; and popular neighborhood gay bars such as Blake's on the Park or Joe's on Juniper. The Atlanta Eagle and the Heretic would also be great locations because they are bars that host events in which public and group sex could manifest. To be inclusive, Trapeze is a sex club in Atlanta for swingers. Informational flyers could be posted on the walls in there as well. In addition, an information booth during Atlanta's annual pride celebration could be beneficial. Because these are venues in which large amounts of alcohol is consumed, messages will need to be tailored to induce peripheral route processing. Cognitive functioning will be lower and something else will need to catch the attention of readers.

Internet addresses that provide detailed information about *Shigella* and shigellosis need to be included on print media. Magazine ads and flyers posted on bathroom walls should include a QR code that takes users to a website with more information about *Shigella* bacteria and ways to prevent becoming infected with it. This would prevent the possibility of people forgetting what web address to visit after leaving the restroom or reading a magazine. This would also be a discreet way for MSM who do not publicly identify as gay or bisexual to learn more about sexual health. In addition, heterosexuals who engage in any of the previously mentioned sexual behaviors that increase their risk of shigellosis will be able to learn how to protect themselves without fear of being stigmatized. Having both the website(s) listed and a QR code could possibly bridge the gap between those who are comfortable with technology and those who have little experience with it.

Discussion/Conclusion

Shigella has been around for quite a long time and has not discriminated against the type of person it infects. Although no one is immune to a shigellosis infection, different groups of people are at greater risk for different reasons. Shigellosis began being associated with sexual behavior during the 1970s, but it was not linked with MSM sexual behavior until a shigellosis outbreak during the 1990s occurred in San Francisco. Over the course of time and like other diseases that are treated with antibiotics, a resistance has emerged among the different species of *Shigella* to either certain antibiotics or a combination of them. The more often shigellosis is treated with antibiotics, the more likely it is to become a superbug that is resistant to almost all forms of treatment.

Shigellosis infections among the MSM community depends on the different behaviors they engage in. Some behaviors place MSM at greater risk compared to others. Bareback sex has become a more prominent activity among subgroups of MSM. There are those who engage in bareback sex because they are under the influence of drugs and/or alcohol; enjoy going to circuit parties and/or engaging in group sex; prefer engaging in certain sexual acts such as fisting, rimming, or felching; or a combination of all. The popularity of PrEP among MSM has led to more MSM engaging in bareback sex because they perceive the threat of acquiring HIV/AIDS to be less. PrEP use has brought back the idea from the sexual revolution that MSM can experience sexual behaviors with as many partners as they would like without fear of repercussion. This has also led to a change in the way MSM communicate with each other about their HIV/AIDS status and their preferred method of safe sexual practices.

To learn the best means of informing the MSM community about *Shigella* bacteria and shigellosis, members of the MSM community were recruited to give feedback on how messages

should be framed, where messages should be placed, and who should be targeted by messages. The overall main theme brought up by participants was the use of humor. Participants believed MSM would be more likely to retain information and spread information if the message was funny. The word “Shigella” was often made fun of and laughed about as a drag queen’s name by some. Inclusive messages were suggested by several focus group participants so that messages targeting MSM would not perpetuate stigma toward them. Messages that promote inclusiveness have been studied among many disciplines. Among sexual health professionals, inclusiveness is important when educating others so that stigma and stereotypes are not perpetuated. This was found to be true with educating the general population about PrEP rather than educating only MSM or African American MSM (Calabrese et al., 2016).

This adds to the current literature by discussing behaviors that increase the risk of shigellosis transmission, identifying how MSM perceive the seriousness of shigellosis, and the types of shigellosis messaging MSM would most likely respond to. Most of the suggestions about effective messaging strategies relied on the peripheral processing route of the ELM with the use of humor and information that was quick and easy to read. However, participants also mentioned locations that would benefit from more in-depth information, such as doctors’ offices and clinics, because they had more time to read and digest the information presented. These locations make use of their cognitive abilities to elaborate on the information and give rise to the central processing route of the ELM. There have not been many in-depth qualitative studies investigating sexual behaviors that increase the risk of shigellosis among MSM. There is a need for future research to address this gap in the literature.

Out of all focus group participants, only one reported learning about this study from a flyer posted in a gay bathhouse even though many participants believed flyers should be posted there.

Also, only one participant mentioned having concurrent sexual partners, but no insight was given as to when, how many, and how often those encounters occurred. Future research should explore this relationship further to identify any associations in preferred types of prevention messages among those who attend bathhouses or engage in concurrent sexual partnerships. Another topic that should be explored is the impact shigellosis has among HIV-positive MSM. It is possible that prevention strategies from those who are more seriously affected by shigellosis would have a greater impact. Those who have had a personal diagnosis of shigellosis could also have a greater impact on what messages should look like and what information should be included.

There is also a need for future evaluations of the messages created. Those that are effective in one environment may not be as effective in others. As changes in the demographics and environments of communities, policies, and technology occur, messaging strategies will also need to be refined, updated, and improved. Stakeholders will need to decide what questions should be answered during the evaluation process and what methods will be best suited for answering those questions. Future evaluation will also lead to the improvement of messaging strategies among the status quo and messages based on other theories or models.

Though the focus group data gave an insight into how MSM think about *Shigella* bacteria and shigellosis, there are limitations. First, it is possible that participants were not representative due to the sample size. Second, the educational attainment of focus group participants was not representative of the United States. The majority of participants (45%) had completed a four-year college degree, with six (25%) possessing an advanced degree. Among the general United States population, 32.5% of Americans over the age of 25 graduate college with a Bachelor's degree and 12% attain an advanced degree (Ryan & Bauman, 2016). These participants could have sexual behaviors and/or experiences that were influenced by conversations with people about sexual

education and experiences during their college careers. They could also have been influenced by their own sexual experience with hook-up culture that is suggested to be part of college life (Wade, 2017). Third, almost half of the participants were alive during the AIDS epidemic. It is possible they might not have found shigellosis to be as severe of a disease compared to AIDS due to the number of lives lost and the associations of AIDS affecting only gay men during the initial years of the AIDS epidemic. It is possible that the younger participants grew up in an environment in which HIV/AIDS was already a chronic disease when they learned about it. Fourth, many of the participants learned of the study from a friend. They could be members of social networks that are open to discussing sexual behavior and sexual histories. It is possible that MSM who do not engage in open discussions about sexual behavior would have a different perspective regarding shigellosis. It is also possible that these participants do not engage in any of the mentioned risky sexual behaviors. They might be more likely to react to messages of shigellosis than those who do engage in risky sexual behavior.

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Appendix A

Participant Recruitment Form

Sexual Health Study for Gay and Bisexual Men

Respondent Name: _____

Respondent Phone: _____

These questions will only take a few minutes. May I ask you the questions now?

___ yes

___ no

So first let me ask, are you interested in participating in a focus group. If yes, proceed with questions. If no, thank them for their time.

Thank you. In order to determine eligibility, I have a few questions.

1. What is your current age?
[If under 18, thank them for their time and let them know they are not eligible for this particular study.]
2. How do you identify your sex? Male, Female, Transman, Transwoman, or Other
[If Female or Transwoman, thank them for their time and let them know they are not eligible for this particular study.]
3. Have you had sex with another man in the past 3 months? Yes, No
[If no, thank them for their time and let them know they are not eligible for this particular study.]

[If not eligible] Thank you for your time and interest, you are not currently eligible at this time.

You are eligible to participate. [Read informed consent to eligible candidate.]

Would you like to participate in this study?

[If no] Thank you for your time and interest.

Thank you for agreeing to participate in this study. I have a few more questions.

1. Are you Hispanic? Yes No
2. Which of the following do you identify? Black/African American, Latino, White/Caucasian, Other, please identify: _____
3. What is your highest level of education? Some or no high school / Completed high school / Some college / completed 4-year college degree / at least some post-graduate
4. Have you ever used social networking apps, like Jack'd, Grindr, or Tinder to meet other men?
5. Which ones?

Thank you for your time.

Would you like a reminder call or e-mail one or two days before our scheduled time? I will destroy your contact information after the completion of your participation to protect your confidentiality. [Note contact information under their nickname or an "R," for reserved, if they do not provide a nickname at screening.]

Any questions before we end? Again, thank you for your interest and have a great day.

Appendix B

Phase 1 Focus Group Moderator Guide

Form IRB Approved H17541

Sexual Health Study for Gay and Bisexual Men

Phase 1 Focus Group Moderator Guide

GROUP NUMBER:

DATE:

MODERATOR:

ASSISTANT MODERATOR:

COORDINATOR:

OTHER STAFF PRESENT:

1st FOCUS GROUP MODERATOR GUIDE-Shigellosis among MSM

Moderator: Your instructions for carrying out this focus group are in brackets [*] and are not read to the participants. Anything not in [*] is said out loud to the participants.

FOCUS GROUP INTERVIEW GUIDE

[Before participants arrive, write all ground rules on flip chart and post in a location visible to all participants during the focus group. Write information about shigellosis on a flip chart but wait to post until appropriate point during discussion. Information to be written on a flip chart is as follows]:

[Shigella/Shigellosis]

- [*Shigella* is a germ that causes diarrhea that usually lasts between 5 and 7 days.
 - Other symptoms can include fever, cramping, and sometimes bloody diarrhea.
 - Although most people with shigellosis recover without treatment in about a week, antibiotics are sometimes used to treat patients with shigellosis to help them feel better.
 - Some people who catch it may need to be hospitalized.
- Shigellosis is spread when *Shigella* germs from a sick person gets into another person's body. This can happen when:
 - Food, beverages, or water get contaminated by a sick person and then swallowed by someone else
 - A tiny amount of poop on someone's hands or body gets into someone else's mouth through person-to-person contact (e.g. unwashed hands, sex, etc.,)
- Shigellosis may be more severe, and poop can contain *Shigella* germs for a longer time among HIV-infected gay and bisexual men.
- Shigellosis patients can be treated with drugs called antibiotics that kill or stop the growth of germs.
 - Some *Shigella* germs resist the effects of an antibiotic –that is, the germs are not killed and their growth is not stopped.
 - Among people with shigellosis, gay and bisexual men are at least 3 times more likely than other people to have *Shigella* germs that resist the effects of an antibiotic.
- Because *Shigella* germs can be found in poop even after a person has gotten better, doctors might tell people not to have sex for a few weeks after they get better to prevent the spread of *Shigella* germs.]

[As participants arrive, confirm eligibility by asking each person's age and any other screening questions which may be relevant to the groupings (race, education, etc.). Be discrete so that others around will not hear the individual's response. Have the participant complete the sign-in sheet and assign an ID number to the participant.]

[Give the participants a name tag and ask them to put a nickname on the name tag. Inform the participants that this is the name that will be used during the focus group to protect their privacy. It's important they pick a nickname to which they feel comfortable being referred. We encourage

them not to use their given name to further protect their identity. Apply their nickname to their ID number, accordingly.]

[Please take time and read the consent forms.]

Welcome and thank you for agreeing to participate in this focus group. My name is _____. My role is to guide the discussion tonight/today.

I am going to begin by reading the consent form aloud. Please follow along, and after I read the form, you will need to sign it with your given, or legal name. This form will not be shared outside this group, and we will not link your name to your responses.

[Read aloud the consent form with everyone following along or give time for everyone to read the consent on their own. Ask them if they have any questions, and address those questions, including, if you don't know. To build trust, it is important you are honest with participants. Collect the signed forms.]

So, thank you again for joining us today. As a reminder, we asked you to join us today to talk about a germ that can affect the sexual health of gay and bisexual men. You all have been invited to participate because we need your help in developing health communication messages.

I would like to hear your honest opinions about the topics we discuss. There are no right or wrong answers to the questions I'm going to ask. We, myself and the larger research team, want to hear, in your own words, your thoughts, experiences and opinions about the topics we'll be discussing. You can choose not to respond to a question at any time and your participation in this study is completely voluntary, and you can leave at any time.

Before we get started, there are just a few things I'd like to point out. We are audio recording this session so I can listen to what you have to say and not worry about taking notes. The recording will help us write our reports and are used for this purpose only. In addition, other research staff members may be present to observe and take notes. Everything you say will be kept secure and anything that is reported will be done without your names or any identifiers. In other words, no one who reads the final report will know or be able to figure out that any of you participated in this study. Only research staff will have access to this information.

Does anyone have any questions?

[Read the ground rules as posted in the room.]

Ground Rules

There are also a few ground rules that I would like us to adopt for our discussion:

- ◆ You have been asked here to offer your views and opinions.
 - We know that each of you might have different views about this topic. You might hear opinions that you do not agree with, and if this happens, we ask that you respectfully listen and then share your opinion.

- ◆ To the extent the law allows, the focus group facilitators will keep all comments secure. For example, in the event a participant discusses an instance of abuse or suicide, we are mandated by law to report the incidence.
- ◆ We ask that you not share comments you hear today with anyone outside this room. You should know that there is the possibility that a focus group participant may not honor this request.
- ◆ We ask that you please only discuss your own experiences, thoughts, and opinions. Please do not mention information about anyone who is not present for the focus group today. If you have relevant information, please only speak in general terms about the subject, not about specific individuals.
- ◆ Everyone's input is important; I may call on you if you are being quiet, but you are free not to answer or respond.
- ◆ Avoid side conversations.
- ◆ Let one person speak at a time.
- ◆ I may need to cut a discussion short to get through the whole guide.
- ◆ Please turn off all cell phones and electronic devices!
- ◆ There are no right or wrong answers.
- ◆ All answers will be kept secure and anonymous, so feel free to speak your mind.
- ◆ Respect one another at all times.
- ◆ It's okay to disagree.
- ◆ As a way to help us, please state your nickname- be careful not to use your given/legal name, when you make a comment.

Do you have any questions before we begin?

If there are no more questions, I am going to start recording now. [Turn on audio recorder]

[Introduction/Warm up.]

1. Let's begin by finding out a little bit about each of you. Please tell us your:
 - a. Nickname i.e. the name you want to use today,
 - b. Favorite TV show, and
 - c. Favorite type of music

[To further build trust] I'll start. My name is [name], my favorite TV show is [name], and my favorite type of music is [name]. [Ask a specific person] Who would like to go next? [Go around the table until everyone has introduced themselves.]. Thank you.

[Sources/Severity]

Let's start by talking about where you go for health information....

2. Where do you go if you have a health-related question?
 - a. PROBE
 - i. Doctor/healthcare provider? School? Peers/Friends? Family?
Computer/internet? Apps? What sites?

- ii. Does the source of health information change if it's something you're currently experiencing vs. heard about from a friend?
- 3. What sources do you trust for health information?
 - a. PROBE:
 - i. Have you ever heard of CDC? Have you ever gone to the CDC website for information? Do you trust the CDC?
 - ii. What about the Georgia Health Department? Have you gone to their website for information? Do you trust the health department?
 - iii. Do you trust other sources? (e.g. internet (wiki, WebMD), doctor, friends, school, etc.)
- 4. Now let's specifically talk about sexual health, where would you go if you had a question about your sexual health?
 - a. PROBE:
 - i. Which of those sources do you trust?

[*Shigella/shigellosis* knowledge]

Okay now I would like to talk about a specific health topic.

- 5. Who here, by show of hands, has ever heard of *Shigella* or shigellosis? [moderator – note out loud how many hands are raised].
 - a. PROBE
 - i. [if no one has heard of it] what do these words make you think of?
 - ii. [if some have heard of it] We will say more about what it is for those who haven't heard of it in a moment, but for those who have heard, what do you know about it?
 - 1. [if they say it makes you sick, ask the following] Have you heard about what symptoms people get? Who do you think gets sick? How do people get sick with it? How do you get better if you have it?
 - 2. [if they say it's spread through poop or feces] Who gets sick? What behaviors give you more of a chance of getting sick? How can you prevent getting sick?

I am now going to read some information about shigellosis [handout information sheet or project on wall]

Shigella is a germ that causes diarrhea that usually lasts between 5 and 7 days. *Shigella* germs can cause fever, lots of cramping and sometimes bloody diarrhea. Although most people with shigellosis recover without treatment in about a week, antibiotics are sometimes used to treat patients with shigellosis to help them feel better. Some people who catch it may need to be hospitalized. Shigellosis is spread when *Shigella* germs from a sick person gets into another person's body. This can happen when *Shigella* germs get into food, drinks, or water that is then swallowed by someone else, or if a tiny amount of poop on someone's hands or body gets into

someone else's mouth through person-to-person contact, such as having close contact and then putting your unwashed hands on your food or in your mouth, or during sex.

Furthermore, shigellosis may be more severe, and poop can contain *Shigella* germs for a longer time, among HIV-infected gay and bisexual men. Shigellosis patients can be treated with drugs called antibiotics that kill or stop the growth of bacteria germs. Some *Shigella* germs resist the effects of an antibiotic –that is, the germs are not killed and their growth is not stopped. This is at least 3 times more common among gay and bisexual men with shigellosis than among other groups of people with shigellosis. Doctors might tell people not to have sex for a few weeks after they get better to prevent the spread of *Shigella* germs.

6. After listening to that description of shigellosis, what is your initial reaction?
 - a. PROBE:
 - i. What do you want to know more about? What is confusing?
 - ii. Specific words or phrases?
7. Do you think men like yourself are at risk for shigellosis?
 - a. PROBE
 - i. Why or why not?
8. If you had diarrhea, how likely would you tell your partner before having sex?
 - a. PROBE
 - i. Why or why not?
 - ii. If you had more severe symptoms (e.g. bloody diarrhea), would you be more likely to tell your partner?
 - iii. What if you knew that you had shigellosis specifically? Or antibiotic-resistant shigellosis?
9. Before having sex with your partner, would you ask if he recently had diarrhea?
 - a. PROBE
 - i. Why or why not?
 - ii. Would you be more likely to ask someone that you didn't know well? (such as an anonymous partner)
 - iii. How would their answers affect you?

[Developing Sexual Health Messages]

I appreciate your honest responses. As mentioned at the beginning of the group, we would like to develop messages about a germ that can affect the sexual health of gay and bisexual men.

10. Imagine that a message was being developed for sexual health. What would make you remember the message?
11. What do you think men like you need to know about *Shigella*?

12. Tell me, who and/or what do you think is the most effective way to educate gay, bisexual men about various diseases that can be transmitted during sex?

a. PROBE:

- i. What formats should these messages be? (E.g. poster, flyer, dating apps, health websites, online, clinics, magazines, text message, etc. Video? Audio? Plain text?)
- ii. Anything you don't like to see (e.g. images or words)?

13. Because shigellosis can be sexually transmitted, would men like you be more or less likely to hear the message if *Shigella* was called an STD?

a. PROBE: Why or why not?

[Health Materials]

Now I would like to get your feedback on some health materials that have recently been used to raise awareness about shigellosis among gay, and bisexual men.

[Show 1st health material (project on wall or give a physical hand out). State aloud the headline of the health material so it is recorded in the transcript. – Repeat for all health materials shown. Allow time for participants to take it in.]

14. What are your initial reactions to this flyer?

a. PROBE:

- i. What do you like about this flyer?
- ii. What do you dislike?

15. What are the words or phrases that you think work well in this message?

a. PROBE:

- i. Are there any words or phrases that you like?
- ii. Are there any words or phrases that you *don't like*?
 - o What other words can be used in their place?

16. What is confusing, unclear, or hard to understand about the message?

a. PROBE:

- i. What makes it confusing or hard to understand?
- ii. Any specific words that are confusing or hard to understand?
- iii. What other words can be used to make it easier to understand?

17. [If the flyer contains images] What do you think about the images?

a. PROBE – INCLUDING PROBES ON WHAT THEY COMMENTED ON:

- i. Do they grab your attention? Why or why not?
- ii. Do they make you want to read the message? Why or why not?
- iii. Do they help you understand the message? How so?
- iv. What images help to understand the message?
 - o What are the main reasons the images help or are important?

- v. Is there anything confusing or unclear about the images? If so, what?
 - o What other images can be used in their place?

18. [If the flyer does not contain images] Do you think this flyer would be better with some images? If so, what kind?

[CLOSING]

19. Is there anything else you would like to add about what we discussed today?

Thank you for your time and your responses. That is all the questions that I have. We have left time at the end to ask if we missed something or do you have something you would like to say about the topics covered tonight/today. Please feel free.

[Give them a long pause and consider asking a particular person if they have something to say.]

Thank you again for taking time out of your day to come talk with us about these topics.

As a gentle reminder, please keep all information that we have discussed confidential.

Before you go, let's take care of incentive payment. I will also give you a flyer with more information about shigellosis. Any final thoughts or questions?

[Pause]

Have a good day/evening, I'm stopping the recorder. [Stop recorder.]